

REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Clams 1-9, 11-18 are pending in the present application. Claims 1, 2, 5, 9, 13, 14, 16 and 17 are amended, Claim 10 is canceled, and Claim 18 is added by the present amendment.

In the outstanding Office Action, Claims 2 and 10 were rejected under 35 U.S.C. § 112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claims 1, 6 and 16 were rejected under 35 U.S.C. § 103(a) as unpatentable over Kim (US '611 B1) in view of Matsuo. Claims 2 and 3 were rejected under 35 U.S.C. § 103(a) as unpatentable over Kim and Matsuo and further view of Kim (U.S. '516 B1). Claim 4 was rejected under 35 U.S.C. § 103(a) as unpatentable over Kim and Matsuo in further view of Nishikawa. Claim 5 was rejected under 35 U.S.C. § 103(a) as unpatentable over Kim and Matsuo in further view of Hirashi in further view of Hirabayashi. Claim 7 was rejected under 35 U.S.C. § 103(a) as unpatentable over Kim and Matsuo in further view of Sasaki. Claim 8 was rejected under 35 U.S.C. § 103(a) as unpatentable over Kim and Matsuo in further view of Sakamoto. Claims 9 and 10 were rejected under 35 U.S.C. § 103(a) over Kim and Matsuo in further view of Ohkawara. Claims 11 and 12 were rejected under 35 U.S.C. § 103(a) as unpatentable over Kim and Matsuo and Ohkawara in further view of Zhang. Claim 13 was rejected under 35 U.S.C. § 103(a) as unpatentable over Kim and Matsuo and Ohkawara in view of Lim. Claim 14 was rejected under 35 U.S.C. § 103(a) as unpatentable over Nishikawa in view of Numao. Claim 15 was rejected under 35 U.S.C. § 103(a) as unpatentable over Nishikawa and Numao in view of Kagawa. Claim 17 was rejected under 35 U.S.C. § 103(a) as unpatentable over Kim and Matsuo and Sasaki in view of Ohkawara.

Claims 2 and 10 were rejected under 35 U.S.C. §112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claim 2 has been amended, Claim 10 has been canceled, and Claim 18 has been added in light of the comments noted in the outstanding Office Action. Accordingly, it is respectfully requested the rejection to Claims 2 and 10 be withdrawn.

Claims 1, 6 and 16 were rejected under 35 U.S.C. § 103(a) as unpatentable over Kim and Matsuo. This rejection is respectfully traversed.

Amended Claim 1 recites, in part, that the first and second pixel electrodes apply electric fields of varying strength to the liquid crystal. Claim 6 depends from Claim 1, and amended Claim 16 includes similar features.

The first and second pixel electrodes 16, 14 are represented in Figures 1, 2 and 3 as first and second layers of indium tin oxide (“ITO”), which serves as a transparent conducting film. An interlayer insulating film 101 separates the two pixel electrodes (page 16, line 6 – page 17, line 13). In a non-limiting example, the claimed invention can be applied to a transparent LCD device using a transparent electrode such as ITO for the pixel electrodes (page 28, lines 7-12). As explained in that example, the pixel electrodes (first and second) are separated by an insulating film and, as a result, it becomes easy to apply electrical fields of different sizes in regions of the same pixel (page 29, lines 7-16). As further explained, the pixel electrodes have a constitution wherein an insulating film is formed therebetween. Because of this, there is no need to create regions where the insulating film remains and where the insulating film is removed on the same pixel electrode as before, even in the case where the electrical field intensities applied to the liquid crystal vary greatly (page 32, lines 8-22). In sum, an electric field is applied to the insulating layer by the first and second pixel electrodes, and this requires that the electrodes have different voltages.

On the contrary, Kim discloses first and second pixel electrodes having different voltages. Figure 4B of Kim illustrates a second pixel electrode 27 in contact with an exposed first pixel electrode 24 (col. 2, lines 51-64). Because the first 24 and second pixel electrodes 27 of Kim are in contact with one another, they cannot apply electric fields of different strengths. Therefore, Kim does not disclose the first and second pixel electrodes applying electric fields of different strengths of amended Claim 1. Further, the Office Action does not cite Matsuo as disclosing the first and second pixel electrodes at issue. Accordingly, it is respectfully requested the rejection under § 103(a) to Claims 1, 6 and 16 be withdrawn.

Claims 2-13 and 17 also were rejected under 35 U.S.C. § 103(a) as unpatentable over Kim and various other references. None of the various other references are cited by the Office Action as disclosing the claimed first and second pixel electrodes. Claims 2-13 depend directly or indirectly from Claims 1 and 9, which recite first and second pixel electrodes applying electric fields of different strengths. Accordingly, it is respectfully requested the rejection of Claims 2-13 and 17 under 35 U.S.C. § 103(a) be withdrawn.

Claim 14 was rejected under 35 U.S.C. § 103(a) as unpatentable over Nishikawa in view of Numao. This rejection is respectfully traversed.

Amended Claim 14 is directed to, in part, a liquid crystal display device having liquid crystal between a pair of substrates, a plurality of pixels each having a switching device, and means for applying spatially different voltages to the liquid crystal in a pixel. Claim 15 depends from Claim 14, and therefore includes the same features.

The specification states that it is an object of the present invention to provide a liquid crystal display with a wide viewing angle range (page 11, lines 1-3). Further, the specification states that in order to expand the viewing angle range, it is necessary to create regions with different electric field strength applied to the liquid crystal in one pixel (page 9, lines 16-18). Figures 18 and 19 illustrate a configuration establishing a range where the

electric field applied to the liquid crystal varies, amongst regions A and B, in one pixel (page 6, line 22 – page 7, line 4). Similar construction is shown in Figures 8-12, which illustrate embodiments of the invention for an active matrix-type liquid crystal display device (page 13, line 13 – page 14, line 6).

On the contrary, Numao discloses a passive matrix liquid crystal display device, in which four levels of gray scale are achieved by applying one of four kinds of signal voltages to a segmented electrode S (col. 17, lines 5-19). Nishikawa discloses an STN liquid crystal display device having one or two optical compensatory sheets placed between a liquid crystal panel and a polarizing plate (col. 3, lines 12-17). Thus, the cited references merely describe a passive matrix liquid crystal display device having an optical film. No mention is made of applying spatially different voltages to the liquid crystal in each pixel. Accordingly, it is respectfully requested the § 103(a) rejection of Claims 14 and 15 be withdrawn.

For the reasons stated above, it is respectfully submitted independent Claims 1, 9, 14, 16 and 17, and claims depending directly or indirectly therefrom, are allowable. Further, it is respectfully submitted that Claim 18, which includes subject matter similar to Claim 2, is also allowable.

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Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable to that effect is respectfully requested.

Respectfully submitted,

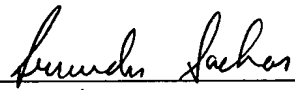
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